5: Schwimmer E-4,5 (1966-1967) 1973
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Mountain Orokaiva

231 but which, as Williams says in his discussion on Orokaiva domestic animals (1930: 60–3), are all ultimately destined for the pot. The fowl population has likewise remained more or less constant for some time (e.g. about 30 in Inonda, 235 40 in Sivepe). The birds are useful not only as a source of meat and eggs, but also of cockerel feathers which are plucked and used for decoration on headdresses, spears, etc. Unlike the dogs, the fowls are no longer a purely [177] indigenous variety: they have been crossed with Rhode Island Reds introduced in the 1950s.

231 A few years before I did my fieldwork, the government began a vigorous campaign to eliminate pig husbandry from Orokaiva villages, in an attempt to [744] improve village hygiene. Though this campaign generally was not very successful, domestic pigs had all but disappeared from the villages where I stayed. Like the other domestic animals they were left to forage for food most of the time but were also fed with pieces of taro and other left-over food, as well as pawpaw, coconut, etc. They mostly slept under the houses, but were free to roam. Males [825] were castrated and females were fertilised by boars roaming in the bush. A close *quasi*-kinship link was assumed to exist between the pig and its keepers, and this was emphasised by taboos on eating a pig reared by a close relative. Techniques of domestication will be discussed below.

241 *Horticulture*. The Orokaiva word *pure* has at least two important meanings: 'work' and 'garden'. As elsewhere in Papua–New Guinea, the garden is a centre of sexual, social, religious as well as industrial activity.

The main product is taro which occupies perhaps nine tenths of the area. But a great variety of other plants are also found: banana, sugar-cane, edible pitpit, German taro (*xantosoma*), a few introduced vegetables such as pineapples, tomatoes, beans, and some sweet potato. Some trees may also be planted though these will not bear until long after the garden has been abandoned: breadfruit, *tauga*, coconut, areca. In addition there are always some herbs and medicines, and if the gardener is a professional medicine man there will be a great many of these. Yams are grown in separate gardens.

Very full data on the size of these gardens have been provided by Crocombe and Hogbin (1963) and Rimoldi (1966). A household tends to establish something like one and a half to two acres of garden per year. A garden is never used for more than one taro season, but as planting and consumption of the taro each tend to be stretched over most of a year, almost two years elapse between the clearing and final abandonment. This gives time for the bananas and sugar-cane to reach maturity too. Once a garden is abandoned, it is not used again for at least eight years or so. The usual swidden agriculture techniques are used, burning, clearing, careful removal of 'rubbish' remaining after the burning process, planting with a digging stick, periodic attention to weeding and heaping up of earth around growing taro, removal of corm-bearing bases of petioles of [242] mature taro for removal and planting in a new garden. The Orokaiva practise no irrigation, no form of terracing or drainage, no manuring, no measures against parasites. Sometimes a fence is made out of tree trunks to keep pigs from breaking in. This is usually done only after a pig has made its first expedition, and only on the side where the pig entered.

While planting and harvesting proceeds almost throughout the year there are [132] important seasonal variations that should not be ignored. There is a dry and a

[TEXT CONTINUED ON PAGE 22]

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their home country. American troops, by their equal treatment of Negro soldiers, created the impression that racial barriers had no place in their society! The troops' friendliness to the Papuans was tangibly expressed by gifts, not only of tobacco and other small luxuries, but also of discarded tools and equipment still used in villages today. It is in these events that the Orokaiva saw the portent of the coming of a new era.

The Eruption of Mount Lamington. In 1951, a Peléan eruption occurred on Mount Lamington. The *nuée ardente* produced by this eruption completely devastated a surrounding area of 68 sq. miles (Taylor 1958). Almost 4,000 people were killed and there were hardly any survivors of the numerous Sangara tribe. Those who did survive were provided with food, medicines and other comforts by the government and were for some time maintained in evacuation camps. The evacuees were not at once allowed to return to their villages as the authorities feared further explosions in the mountain. Some officials saw in this sequence of events a chance to create Papuan model communities with up-to-date socio-economic institutions. These plans for village reform, whatever their merits, were not realised at that time, partly because the danger of further explosions was soon greatly reduced, in the view of vulcanologists, so that the people were allowed to go back to their old village sites; partly also, because the reforms were not favoured by the Australian administration which assumed power after the defeat of the Labour Government in 1951.

Intensification of Development Policy. Large scale, expertly planned social, economic and political development did not start in Papua until around 1960 (Parker 1966:189). In the economic sphere the first major development success was the building up of a coffee industry based on the production of indigenous growers using their own village land. While by far the largest quantity of this coffee is grown in the Highlands, the yield in the Northern District was enough to assure to any Orokaiva who entered the scheme an income of something like $60–100, in the year 1966–67. During that year all the villages I visited, both on the foothills and in the plains, were producing coffee. It was an activity in which any able-bodied man resident in a village would normally engage to a greater or lesser extent. Several factors aided the development of this industry.

Agricultural extension work to train the population of the Northern District in coffee growing began immediately after the eruption. A training school was set up in Popondetta. Papuan agricultural assistants were trained to give basic instruction and to distribute seed. These assistants spread knowledge not only while they were employed by the government, but even more when they went back to their villages and grew their own coffee.

Title improvement work is also beginning to contribute to agricultural development. Until 1956, the government kept entirely aloof from indigenous tenure problems and passed no ordinances enabling it to adjudicate in land disputes. By that time, however, it had become obvious that commercial arboriculture could be developed only to a limited extent unless a land registry was introduced and the traditional Orokaiva principle of maintaining residual rights in land was adandoned. Though the first attempts to change the land tenure system were unsuccessful, in 1967 it looked as though a very satisfactory procedure had been worked out. (See Ch. V.)

Road improvement was another necessary preliminary to significant village

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When the Japanese landed at Gona Mission in July 1942, all the Yega - men, women and children - fled into the bush and made their way to Ambasi, 30 miles to the north-west. There they lived for the next two years, returning to the Gona area in 1944. By 1950 they had settled down again on their seven traditional village sites along the coast between Cape Killerton and the eastern end of Holnicote Bay. One new village was established at Surilai on Cape Killerton.

Clan membership determined the village of residence of each family in the Yega tribe. In some instances, place of residence was determined by membership of a particular sub-clan. Of the eight Yega villages, four were inhabited by male members of more than one clan. The remaining four villages were each occupied by members of only one clan and their wives and children.

After an abortive attempt at communal farming in 1947-52, the large village of Beporo was brought into existence under the direction and guidance of two educated young men who taught that a large village close to the mission church, school and hospital was the 'civilized' form of settlement. Some three quarters of the Yega people, apart from those in wage-work away from home, moved to Beporo village which was expanded to accommodate them. Although a broad pattern of clan residence could still be recognized in Beporo, the clans themselves began to lose their functional identity within the tribe. There was a weakening of traditional kinship patterns of co-operation in everyday activities.

Although their earlier communal farming venture had failed, the Yega were still very much attracted to the idea of making money from cash crops. Accordingly, with the advice of the District Agricultural Officer (D.A.O.), they cleared 15 blocks during 1957-8 and planted them with coffee trees. These blocks ranged from a quarter of an acre to two acres in area; one was planted by a group of six relatives, the remainder by individuals of various clans.

For the most part these coffee blocks were cleared in areas of secondary forest which normally formed part of the land rotation cycle for food crop production. Although they were located at distances of up to four miles from the blockholders' villages, only one man changed his place of residence as a direct result of establishing a coffee block. This man moved to Gatara, two and a half miles inland from his previous home and established a single-family homestead, a settlement quite out of keeping with traditional Yega practice. The coffee scheme failed, partly on account of low prices received for early pickings, and partly because in 1960 a much more ambitious cocoa-planting scheme, the so-called Yega Scheme, was begun. It absorbed most of the energies of the Yega during the following two or three years.

Genesis of the Yega Scheme

The term Yega Scheme has been applied by the Administration to the cocoa-planting enterprise undertaken by the Yega people at Ononda, four miles inland from Gona Mission.

On several occasions prior to 1960, the Yega people discussed with the D.A.O., Mr M.H. Belfield, their desire to plant extensive areas of cocoa. Suitable land was not available near the coast, and it was not until early 1960 when an old pre-war road was reopened between Gona and Popondetta that access was provided to suitable forest country further inland.[1] In March 1960 Yega representatives advised the D.A.O. that land was now available and sought his advice and assistance in promoting cocoa production. The land available was mature rain forest situated about four miles inland, just north of Ononda Creek (see Fig.5).[A] This land was part of an area over which the Bowori clan of Yega had exercised rights until they were completely wiped out in inter-tribal fighting with the neighbouring Ahora people. Their land was never reallocated among the remaining Yega clans, but was used as communal hunting land to which no one Yega clan had any stronger claim than others. No complex pattern of clan rights applied in the area so there was no need for compromise among clans during the allocation of blocks.[2] Allocation of this land, whether for subsistence gardens or for cash cropping, was vested in the chief Yega land custodian, Nixon Kairembora, who fully approved of the cocoa project.

The land was inspected by the D.A.O. and pronounced suitable for growing cocoa. Investigations by the Department of District Administration showed that ownership of the area specified for the cocoa project was not disputed.

Agriculture and administration officials tried to avoid some of the problems inherent in the Higaturu Council Land Registration Scheme (see Crocombe and Hogbin 1963:89-96) by suggesting that plantings be contiguous rather than in scattered plots of irregular size and shape. Contiguous planting would make all blocks

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[1] The road was built pre-war by the Rev. Henry Holland and was used by the Japanese. Its reopening was mainly due to the efforts of the Anglican missionary in charge at Gona, Rev. E. Kelly.

[2] This exceptional circumstance and its bearing on the accord among clans which had prevailed, at least up to the time of writing, is relevant not only to studies of the Yega Scheme but also to the possible use of this scheme as a 'pilot' for future projects.

A. [For fig. 5 see Category 102, p.45--Analyst]

accessible by road, enable more efficient agriculture extension services, facilitate pest and disease control, and permit a centrally located cocoa fermentary.

To ensure competent local supervision of the establishment of the cocoa plantings, the Agriculture Department Extension Service built a village on the north bank of Ononda Creek. Here trainee agricultural field-workers lived while they worked with the Yega advising and assisting them in the unfamiliar tasks of laying out their blocks, 'lining' the shade trees and ensuring correct spacing of the cocoa trees. The D.A.O. entrusted a local Yega man (Napoleon Aiga of Sambori clan) with the supervision of this work. Although he is not a trained agricultural worker (he was a clerk in the agriculture office at Ioma when selected for the job), Napoleon is a man of great drive and ability; he had the confidence of the Yega and was able to direct and control the trainees who worked with the villagers in the early stages of the scheme.

Beginning in May 1960, an area approximately 7 by 120 chains was rapidly cleared by communal labour with most of the men of all Yega clans taking part. Provision was made for a road down the centre of the cleared area; 48 blocks were marked off, 24 on each side of the central road on 5-chain frontages. The number of blocks was based on the number of men who originally showed interest in participating in the project, plus two special blocks: one was allocated to the mission and one beside the Gona-Popondetta road was reserved as the site for a future fermentary. The remaining 46 blocks were allocated by ballot to participants in the work. The 46 men to whom blocks were allocated represented almost all Yega lineages; those lineages not represented were ones in which only old people remained in the villages, the young men having left home to work in paid employment elsewhere. After the ballot, one week was allowed for voluntary exchanges before a firm list of blockholders was drawn up. This firm list was, however, still subject to alteration within the framework of the traditional Yega land tenure system. Any cultivator considered to be unsatisfactory could be disciplined by the land custodian; if a blocholder failed repeatedly to comply with the standards expected he could be dispossessed, and his block reallocated to another cultivator. One such reallocation did, in fact, take place late in 1960.[1]

[1] The blockholder ignored three warnings from Nixon about his laziness. As a result he was dispossessed and his block allocated to another cultivator; compensation of $3 for work done already was paid by the new blockholder.

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The Land (Tenure Conversion) Ordinance of 1963 altered the tenure position by permitting the granting of individual title to any blockholder who desires it. By July 1964, 17 blockholders had applied for registration of their blocks as the first step to obtaining individual title. When conversion orders were made in favour of these applicants, their blocks were no longer subject to traditional tenure.

With the establishment of individual titles, a pattern seemed likely to develop of dispersed homesteads on smallholdings. In the original clearing no demarcation had been made of the fourth (rear) side of each block since by common agreement each blockholder was permitted to extend his area of cultivation by clearing additional forest on that side. Limits to such clearing were set by Epa and Ononda creeks to the south, and by the Gena and Sesako clan boundary markers to the north. This meant that there was room for extension of each block to a maximum of seven to ten acres.

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The initially cleared area of each block, about one and a half acres, was ready for planting with shade trees (leucaena glauca). By August 1964 each block had been planted with about an acre of shade and cocoa trees. In some poorly-drained sections, numbers of trees of both types had died but the drainage problem could, it was thought, be overcome by deep-ditching. Late in 1962 and early 1963 many young cocoa trees suffered a severe setback as a result of infestation by army worm (tiracola plagiata). Marked irregularity was noticeable in the growth of the cocoa trees: this may be attributed to the depredations of army worm and, to some extent, to micro-variations in soils or topography.

The irregularity of tree growth was reflected in the wide variation in production from block to block. Production of cocoa had commenced at Ononda almost exactly four years from the inception of the scheme. Many blockholders had not, in August 1964, started to pick their cocoa but others were already harvesting regularly and systematically. No attempt had yet been made to establish a co-operative fermentary on the site provided. Instead,
[439] the Popondetta Cocoa Fermentary Pty Ltd made a monthly trip to
[435] collect wet beans from Ononda and two other centres. The price in August 1964 for wet beans at the fermentary was 5½ d. per pound. The price paid at the villages was 3 d. per pound, 2½ d. per pound being deducted for collection expenses.

[434] Cash income earned by the Yega from cocoa was still very small. Work time expended by Yega villagers varied widely. In a few instances pods were picked the previous day but most people picked and opened pods on the morning of the collection. Pods were opened under the trees on the blocks; the wet beans were then carried in cooking pots, basins or sacks about half a mile to the collection

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point at Ononda bridge. Production details for the two occasions observed are given in Table 1.

Table 1

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Yega Scheme cocoa production and growers' income on two occasions

Name	Picking of 1 July 1964				Picking of 29 July 1964			
	Picking	Pods*	Net wt. lbs.	Amount received $	Picking	Pods*	Net wt. lbs.	Amount received $
Wilfred	3rd	86	16	0.40	4th	?	5	0.12
Timothy	3rd	810	143	3.58				
Dick Shepherd	3rd	519	116	2.90	4th	400	103	2.58
Ethelbert	2nd	205	45	1.12				
Livingstone	2nd	408	79	2.08				
Spencer	2nd	136	30	0.75				
Wilson	1st	123	21	0.52	2nd	34	3	0.08
Needham	1st	96	16	0.40				
Reginald	1st	62	18	0.45				
Roy	1st	14	3	0.08				
Geoffrey	1st	60	12	0.30				
Randolph	1st	36	8	0.20				
Hubert Murray	1st	176	30	0.75				
John Livingstone					3rd	?	50	1.25
Bruce**					?	250	56	1.40
Aubrey					3rd	103	27	0.68
Faithful					4th	410	83	2.08
Dewhurst					1st	50	9	0.22
Total		2,731	537	13.53		1,247	336	8.41

*Average 100 pods for 21 lbs wet beans; average beans per pod is 31 (count of 13 pods selected at random).
**Bapa man, not member of Yega Scheme.

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Incentives and income distribution

The Yega Scheme provided the middle-aged men in particular with an opportunity to increase their incomes. The younger Yega men working for wages away from the village were not attracted back home by the prospects of cash crop planting. Only one unmarried man left his job (in the police force) to return home and obtain a block in the scheme.

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Yega Scheme cocoa blocks looking N.W., January 1963.

Yega workers resting under shade trees. Cocoa trees 18 months old, February 1962.

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Harvesting cocoa pods, July 1964.

Selling wet cocoa beans to fermentary representative, July 1964.

Table 2

Ages of blockholders in the Yega Scheme compared to other Yega men of working age

Age grouping	Men with cocoa block		Men without cocoa block		Men working away from villages	
	No	%	No	%	No	%
Under 30	7	15	13	20	53	62
Over 30 and under 40	16	35	17	26	23	27
Over 40 and under 50	17	37	17	26	6	7
Over 50	6	13	18	28	3	4
Total	46	100	65	100	85	100

Note. Ages are in most cases estimates and for the last category estimates by informants.

Table 2 indicates that, of the 46 cocoa blocks in the Yega Scheme, 33 (or 72 per cent) were held by men aged 30 to 50, slightly more than half of whom were over 40. Only 28 per cent of the persons allocated blocks were either under 30 or over 50 but nearly half the persons not allocated blocks were in these groups. The larger number of old men without blocks is understandable. They had few needs other than food and betel nut and the cost of small luxuries like sugar and rice could usually be provided by their sons. On the other hand, there was a very strong desire to obtain cocoa blocks on the part of middle-aged men who did not yet have them. There were few men aged 40 years or over working away from the village, though most of them had been away during their youth. The table emphasizes the distinct preference of young Yega men to work for wages away from home rather than to remain in the village: 89 per cent of the men working away from the village were under 40. Other data showed that 79 per cent of all bachelors over 16 years of age were working away from home or had recently returned from wage employment.

In addition to their earnings from cocoa production, Yega villagers had four sources of income.

i. Exchanging surplus agricultural produce with the mission, which gave tobacco, razor blades, needles, fish hooks, salt, etc. in exchange to the value of one penny per pound weight of produce. This mission barter enabled the Yega to obtain small useful items with no loss of time, for even though prices at the Popondetta market were about three times higher, to get there required about half a day's walk in each direction carrying the produce.

ii. The marketing of agricultural and marine products and handicrafts. Yega participation in the Popondetta market held

Work patterns

Traditionally among the Yega members of one lineage worked together to clear the forest in preparation for planting food gardens. The cleared patch was subdivided among those who helped with the work. Planting and caring for the growing crop was the responsibility of the individual and his family. This traditional pattern was modified when clearing rain forest for the Yega Scheme when the able-bodied men of all lineages worked together. The cleared blocks were then allocated by ballot and the individual concerned was responsible for planting shade trees, laying out a seed bed, planting out the young cocoa trees, 'lifting' shade as the trees increased in size, and keeping down the weed growth. In most instances, relatives who helped the blockholder with these tasks were compensated. For example, the cocoa pickings on 29 July (see Table 1) by Aubrey and John Livingstone were made from the same blocks as those by Ethelbert and Livingstone on 1 July. Aubrey is a member of the same lineage as Ethelbert and John Livingstone is a son of Livingstone. As part payment for work done previously on the blocks these two men were permitted by the blockholders to harvest one month's cocoa production. Other relatives who had helped with the work would be given a similar privilege.

Late in 1962 and early in 1963 many Yega moved their homes to the new villages of Ononda and Binjapada (see Table 5) [A], the reason given in every case being to live closer to their cash-crop areas. In January 1963, however, the move had not resulted in a significant increase in the amount of time spent on the cocoa blocks.[1] This was because of the time spent building their new houses. Only one man out of 12 spent any time working on his cocoa block during the period 14-28 January. The remainder divided their time about equally between building and work in their food gardens, which were scattered between the coast and the new cocoa blocks.

Several attempts were made to introduce communal labour into the production of cocoa. The first was organized by a blockholder, Wilfred Upena, early in 1963. He and 17 others belonging to five different Yega clans agreed to do a day's communal work clearing rain forest to extend each man's block in turn. As the originator of the scheme, Wilfred's turn was first and an acre of rain forest was cleared on his block on the first day. But on my return a year later no further communal work had been done by the group.

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[1] An unsupervised record of daily work was kept by a man living at Ononda from 14.1.63 to 28.1.63, but it was of only limited value.

A, [For Table 5, see Category 166, p.43--Analyst]

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[614] The second attempt at communal labour was by the men of Kurou clan, who agreed to work on specified days on the two cocoa blocks allocated to Kurou members. This scheme was initiated in mid-1963, but only two days' work was done.

The third attempt at communal labour, in July-August 1964, owed its origin to a suggestion made by the Yega councillor in the newly-formed Oro Bay Local Government Council that the Yega should perform communal work on the cocoa blocks on Tuesday each week. The work to be performed was only cutting grass and clearing additional forest, not harvesting cocoa. The first two work periods under this system were observed and the workers counted by a Papuan assistant. The results were remarkable. On both occasions over 60 adults worked for times ranging from 3 to 8½ hours, with a mean time on the two days of 6½ and 8 hours respectively. No matter what time people started work, 'knock-off' time was by whistle at 4.30 p.m.

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461 Cocoa was harvested by individuals. Details of the work times of two men harvesting cocoa for sale to the fermentary representative were observed as follows:

Ethelbert, 1.7.64 (assisted by son aged 6 and daughter aged 8)

Walk from village to cocoa block	25 minutes
Harvest 205 cocoa pods and collect in one spot	55 minutes
Remove beans from pods	50 minutes
Await arrival of fermentary vehicle, weigh produce, await payment	1 hr 35 minutes
Total	3 hrs 45 minutes

Aubrey, 29.7.64 (unassisted)

Walk from village to cocoa blocks (including visit to friend on way)	45 minutes
Harvest 103 cocoa pods	1 hr
Remove beans from pods	40 minutes
Await arrival of vehicle, weigh produce, await payment	2 hrs 10 minutes
Total	4 hrs 35 minutes

[434] The cash reward for labour performed may be seen in Table 1. Ethelbert received $1.12 while Aubrey received $0.68.

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162 in 1960[1] compared with the distributions determined by personal interview in November 1962 and July 1964.

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245 Table 4 and Figs 4 and 5 illustrate the movement of people away from the coastal villages and the rapid increase in number and size of inland villages which followed the implementation of the Yega Scheme in mid-1960. The men interviewed gave two main reasons for this move inland. The men who were allocated a cocoa block moved so that they would be closer to this new field of work; those who were not allocated blocks moved in order to remain near to their relatives.

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166 The movement inland began immediately after the start of clearing the cocoa blocks. In July 1960 a young unmarried man of Seseko clan moved from Beporo and took up residence in the D.A.S.F. settlement. He was soon followed by others from Seseko clan, many of them from Kanaunje and Niniyanda villages. These villages are furthest from the cocoa blocks and, being backed by swamps, have more difficult routes of access than other Yega villages. Convenient village sites were available for the newcomers on two patches of grassland known as Ononda and Binjapada. Seseko clan claimed
(423) hunting rights to Binjapada and a Seseko lineage claimed cultivation rights to Ononda which had been used by Seseko members as a food garden some years previously. There was therefore no dispute over building sites. Even when some members of clans other than Seseko desired to move from the coast in 1962-3, they were allocated building sites on Seseko land close to the houses of Seseko members. The growth of Binjapada and Ononda villages is shown in Table 5.

The result of the migration inland was the development of a 'ribbon' pattern of settlement along the Gona-Popondetta road (Fig.5). A Binjapada was likewise a ribbon pattern on a side road. The houses in Binjapada were much farther apart than in the coastal villages. This is because the house sites were located close to cocoa blocks (Fig.6). B

A development which might have far-reaching effects upon the future Yega settlement pattern was the attempt by several holders of cocoa blocks to locate their dwellings upon the projected extensions to their blocks (Fig.6). As early as November 1962 the holder of block 16 had moved his home from Beporo village to a site on Binjapada grassland which he calculated would be the extension of his block (see Fig.6). By July 1964 his example had been

[TEXT CONTINUED ON PAGE 43]

A, B, [For Figs. 5 & 6, see Category 361, pp. 45-46--Analyst]

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[1] Calculated from the census taken by the author in 1964. Some degree of error is possible because of the movement of paid employees and their families.

245 Work on this scheme had not progressed far at the time of observa-
476 tion because of unseasonable weather. Underbrush and small trees had been cut by each individual on his block but it was decided to wait for dry weather before cutting the big trees by communal effort. All Yega would then be invited to help and helpers would be recompensed after the clearing of each block by a feast given by the blockholder and his family.

245 As with the Yega Scheme, the advice and help of Agricultural
(242) Extension Service officers was requested and given. The site was inspected and soil suitability evaluated before the Yega started
[484] clearing. However, although the layout of the Berojou blocks closely resembled the Ononda blocks, they are half an hour's walk
[487] along narrow footpaths from the Gona-Popondetta road, the only vehicular road in the area.

245 The people concerned in the scheme lived in various places.
36 Most lived in the Konje area, one at Mumburada, one at Gatara,
166 while eight lived in Beporo and one further away at Gombe. However, it was likely that the Beporo and Gombe people would move inland in the near future. There was at the time no talk of moving home sites to the new cocoa blocks at Berojou.

Conclusions

241 The clearing of rain forest for planting blocks with permanent
245 tree crops whose produce was to be sold for cash was a radical
178 departure from traditional Yega land usage. The Yega Scheme in-
423 corporated traditional principles of land tenure and work organization with modifications to meet the changed circumstances of today. Features deriving from traditional precedents were:

[476] (i) the use of communal labour to clear the forest, and the
[464] subdivision of the cleared area among those who helped in the work;

(ii) the absence of any documentary record of the transference of rights to individual right holders (although this was later provided under new legislation);

[464] (iii) the organization of group labour for certain tasks even though recruitment of members might not necessarily be based on purely traditional criteria;

245 (continued)
413 planted, in one case the wife was, in one case the father's sister's
717 husband, in another the half-brother by a different father and in
519 the last case, the father of a half-brother.
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[423] (iv) the strong desire of individual members of extended families each to have personal control of a piece of land and of useful trees on that land.

The aspects which had little precedent in traditional custom were

(i) the systematic layout of blocks;

[433] (ii) the production of crops for sale;

[242] (iii) the supervision and guidance of Agricultural Extension officers and workers, most of whom had no kinship ties with the Yega;

[361] (iv) the provision for the location of a blockholder's dwelling on the block itself rather than in a village.

The value of the Yega Scheme is this combination of old and new which was achieved by basing the scheme on traditional precedents in so far as they were appropriate and incorporating innovations where necessary. The main innovations were organizational and technological - involving new crops, new husbandry techniques, new
241 processing methods and equipment. There was an increase in some
245 forms of group activity, for example bush clearing by all the Yega
178 (whereas bush clearing was traditionally carried out by sub-clan
464 groups), and the proposed co-operative fermentary and marketing facilities. On the other hand, a greater dispersal of residence and the adoption of new mores were responsible for some diminution of traditional forms of group activity. In pre-contact times the family was the basic unit for garden work but larger groups formed for other activities. With the addition of cash crops, agricultural work took more time and many of the larger groups for fishing and social activities atrophied.

241 The rights of the individual in cash cropping land will become
245 more marked in relation to those of the sub-clan and tribe. Whereas
178 food gardens were held by individuals or small descent groups and
423 rights at this level were flexible due to rapid demographic changes and the system of land rotation, cocoa is a relatively permanent crop and the planter is associated all his life with the land on which the trees are planted. With change in the legal status of the land the rights of the social group to the cash crop lands are certain to diminish in favour of individual rights.

361 The new pattern of residence, showing tendencies towards 'ribbon'
178 development and particularly towards the dispersal of homesteads, varied markedly from the traditional form. Most significant of all variations from tradition was the location of homesteads by individuals on potential extensions to their cocoa blocks. With
[423] the registration of individual title to these lands it seems likely that this trend will continue. If the trend towards dispersion

'paddy' to food, prevented the conversion of the food to cash,[1] though it was quite suitable for village consumption as a supplementary food. In fact, imported white rice has now become an important 'status' food at feasts.

Rice continued to be grown for about a year after Rev. Clint's departure; small quantities were sold by the cupful but the income received would have been negligible. In 1951 the crop was attacked by a species of 'army worm' and on the recommendation of the District Agricultural Officer was destroyed. No further plantings were made and all co-operative agricultural activity lapsed.

By 1952 co-operative agricultural activity had ceased among the Yega. The death of Samuel Ungega (the only man in the co-operative who had any training in co-operative work and the only man capable of directing activities on a long-term basis), removed from the Gombe co-operative the main driving force.

The basic reason for the failure of the Christian co-operative seems to have been that Rev. Clint's aim was to produce a storable food crop whereas the Yega wanted a cash crop. The scheme was established on an inadequate business basis and with insufficient understanding of the people's deep-seated desires.

The modern co-operative and the extent of Yega participation

A subsequent co-operative, organized by the Administration and known as the Gona Villages Native Society Limited, came into being in May 1953. In that month share capital amounting to $2542 was repaid by the Administration to 332 members of the old Gona, Gombe (Iaga) and Garara co-operatives, most of whom immediately became shareholders, at a uniform $10 per share, in the new society. The new co-operative was to serve different purposes from the earlier ventures. There was to be no attempt whatever at communal production. Functions were to provide marketing facilities for the agricultural produce of individual members and to conduct a retail trading store.

Operations were begun in a store previously owned by A.H. Bunting Ltd on the Popondetta-Killerton Road, half a mile from Cape Killerton. Originally built from local materials and with a tin

[TEXT CONTINUED ON PAGE 64]

[1] Only brown unpolished rice is issued as rations to the Administration and plantation labour. The endosperm and much of the vitamin content are removed in the production of white rice, so that employers issuing white rice would have to supply additional vitamins, an uneconomic proposition.

roof, the store had to be rebuilt by the co-operative in 1954, on a site adjacent to the original one; it was replaced by a permanent building, constructed on a new site only 100 yards from the wharf at Cape Killerton.

Marketing was of minor importance for the first ten years of the store's operation. Although there were numerous coconut palms in the shareholders' villages, the subsistence demands on them were heavy. Very little copra was offered for sale at the store before 1962 but production increased following a renewed emphasis on the crop by the Department of Agriculture's Extension Service. Copra turnover increased from nil in 1961-2 to $254 in 1962-3 and $1104 in 1963-4. There were at the time of this study few other cash crops in production but labour was an important source of cash.[1]

By contrast the store's retail function was rapidly established. It was for 11 years under the competent control of its first appointed manager, Mr Hankin Kombega, a local Yega man who was also secretary of the society. Within two and a half years from the start of retail trading, a net profit of over $2000 was disbursed to shareholders at the rate of $0.25 for every $2 spent. Only two other rebates were paid - in November 1960 and December 1962; the rebate which would normally have been paid about the end of 1957 or early 1958 was diverted to the construction of the new store. The average rebate paid to shareholders in December 1962 was approximately $3 per head and for Yega shareholders the average was $5.10 per head. Although these amounts may sound small, it should be borne in mind that the share basis was only $10 per head. In addition, the rate of rebate (in 1964, $0.10 per $1) was much higher than that paid by co-operative societies in Australia. The inducement offered by the rebate system did influence Yega purchasers in their choice of a retail store. Of a sample group of eight men questioned, two claimed that all their purchases were made at the co-operative store, four others estimated that over half their purchases were made there, one estimated less than half and one was uncertain.

The Gona Villages Native Society Ltd was managed by a chairman, secretary and board of nine directors, all Papuans, elected by the shareholders. The board met each month and its minutes were sent to the Co-operatives Inspector in Popondetta for approval or veto. If decisions were vetoed, adequate explanation was given.[2]

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[1] See p.65.

[2] An example was the rejection of a board decision to increase the purchase price of copra from 3½d. to 4d. per lb. Detailed costs were calculated to show the board that at 4 d. (3 cents) per lb. they would make too small a profit margin.

warfare. He sees their personality attributes as being "congruent with the social structure that favours individuality and mobility". Reay (1953:111) states that Orokaiva men are encouraged to be highly individualistic. Superficially at least, these views would suggest that the Orokaiva would tend to be receptive to the changes currently being wrought by cash cropping and paid labour though, as Keesing points out, their reaction will be dependent on the monetary and other incentives which these activities provide.

Extension services: McCarthy (1962:110) notes that the Orokaiva people "suffered at the hands of the Yodda valley goldseekers at the end of the nineteenth century and the severity of the magistrate Monckton at the beginning of the new century, and it is said that they have not forgiven either occasion." Subsequent contact experiences have not been such as to alter their attitudes very greatly, and this situation detracts from the effectiveness of the available extension services.

No agricultural extension workers had visited Inonda during the twelve months preceding our visit and it is understood that extension patrols seldom call there more than once a year, and then only for brief visits. Several Inonda people attended a one-day extension class on coffee harvesting at Popondetta during our stay, but this was the only such class they had been aware of in that year. People can, of course, consult extension officers in Popondetta at any time, but as a result of language difficulties and social distance the Inonda people do not take advantage of this facility. The number of extension staff at present in the area is quite inadequate to serve the needs of a community which has only recently become aware of the techniques and potential of cash cropping. More extension services would probably result in extension of cash crop plantings, improved husbandry, and higher output. Pig production could also be expanded to the limits of the existing market.

Transport and marketing: With the completion of the Girua road there will be all-weather road access to both Popondetta and the port of Oro Bay which is soon to be developed to handle overseas shipping. There is at present no commercial transport service to take produce to market and none of the villagers have transport of their own. The quantity of pro-

agreement was drafted and adopted. It reads as follows:

"Agreement to the right of land use.... It has been agreed by the people of [name] clan (or village) and all other interested parties that [applicant's name] has had allocated to him by native custom for his use alone the land marked on the attached plan, and that no other person has a claim to the land. It is also agreed that any coffee trees planted by [the applicant] on the land are his sole property and no other person has claim over them."

The form is dated, signed by the allottee and by "the clan leaders" (in practice it is usual for all resident adult males in the "owning" clan or sub-clan to sign), and by the local councillor. It is witnessed by an officer of the Department of Native Affairs. A map of the land is attached to the form. Forms and maps are prepared in triplicate and one set was to be held by the applicant, one by the council, and one by the District Office in Popondetta. In practice, the council copy is also held by District Office.

Registration under this new rule commenced in 1960, and surveying and registration of plots have continued to the present time. At 1st January, 1963, 588 plots covering 1,120 acres had been registered. A further 1,029 applications for registration had been made but not yet dealt with. Although it was originally intended that no plot would be registered if it was less than two and a half acres in area, many smaller plots have in fact been dealt with and the registered plots at Inonda village measure 1.4, 2.6 and 1.6 acres respectively (though these areas have not yet been fully planted). Some areas of under one acre have been registered. Wherever possible, villagers are encouraged to allocate blocks contiguously, not only to facilitate surveying and identification of land, but also to reduce the extent of border clearing necessary, and to facilitate pest control and extension services.

Provisions for ensuring higher standards of husbandry and output are contained in Rule No.3 of 1959 which requires that persons with cash crops must:

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"(a) ... keep the land clear of all rubbish

(b) ... cut down and burn out all diseased plants and trees....

(c) ... obey the orders of any Agricultural officer....."

A full-time inspector is employed by the council under the ordinance and a number of persons has been prosecuted for failure to keep their coffee and cocoa gardens cleared.

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The question of inheritance of rights to land registered under the scheme has been raised by the council on a number of occasions, particularly during 1962 when it formed the main topic for debate in a number of meetings (most of which were attended by Unit staff). Most councillors favoured either (a) the nomination by the registered "owner" of a single male heir (usually the eldest son), or (b) the inheritance of the coffee block by all sons either jointly or by subdivision to individuals. In the absence of sons, rights were to devolve on brothers, on [614] sisters' sons or on daughters' sons. On the other hand, Native Affairs staff who attended the meetings advocated that as the clan as a whole had made the original allocation, the clan as a whole would need to select the heir. There appeared to be inadequate realization of the different nature of the rights held at the levels of the clan and sub-clan, the lineage and the individual. The fact that all members of the sub-clan were required to sign the agreement was merely a written affirmation of a customary allocation made at some previous time. Under Orokaiva custom, once land rights are allocated they are transmitted thereafter in the male line (subject to occupation, the existence of sons and so on). The councillors were merely asking that the rule be based on the existing custom; a custom which seemed to be appropriate to the circumstances. However, the difference of opinion was not really a matter of great consequence as councillors were informed that advice had been received from headquarters in Port Moresby that the council would not be permitted to make any rule on the question.

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The aim of the registration scheme is to promote the planting of cash crops on individual plots with some security of

Agricultural extension services were begun about 1950. A, B and D had close relations with particular officers and received significant help from them.

The number of cash crop trees owned by the entrepreneurs in December 1965 is shown in Table 2, together with the number of years since that person began cash-cropping. An attempt was made to estimate the number of adult male kin and the number of employees who have worked with each entrepreneur in terms of man-years, but this was unsuccessful because the people have no clear measure of the periods of time spent by each worker with the employer. Even when the period is reasonably accurately known it is difficult to use comparatively, for relatives who assist do so only from time to time and even employees were often not paid a regular wage nor expected to work all the time.

Table 2

Commercial trees owned by entrepreneurs in December 1965

Entrepreneur	Years since cash-cropping began	Coffee trees	Cocoa trees	Coconut trees	Total trees	Acres*
A	20**	4,400	3,500	-	7,900	22.9
B	14	2,512	1,153	-	3,665	9.6
C	13	-	717	340***	1,057	8.5
D	5	-	3,337	-	3,337	13.3

* Estimated from tree figures using conversion ratios of: 500 coffee trees per acre; 250 cocoa trees per acre; 60 coconut trees per acre.

** As most of A's pre-war trees were destroyed during the war, only his post-war cash cropping experience is considered here.

*** Most of these are old coconuts which were growing before C took over.

There may be a slight relationship between number of trees and the period since cash-cropping began, but I suspect there is a greater correlation between extent of cash crops and the supplementary labour used, whether mainly from kin in the case of A, B and C, or by using loan funds as in D's case.

Retail trading, manufacturing, processing and transport

All four entrepreneurs own stores. A and B aspired to own trade stores for many years but did not establish them until they had literate sons to act as managers. The other two entrepreneurs are themselves literate. An illiterate employee operates C's store but

245 Individual planting of cocoa was tried next, with twenty-one
[435] people planting between 20 and 1,300 trees each. The average plantation size per person was 318 trees. Pests and later the sharp fall in world cocoa prices discouraged maintenance and most of the cocoa trees have now been abandoned.[1] Ten people have each planted between 200 and 560 coffee trees with moderate success. In view of this history of setbacks and discouragements there is added significance in the enthusiasm of the Ombi-Tara people for tenure conversion.

Origins of conversion

177 An Ombi man named Charles was instrumental in persuading the
464 people of the merits of conversion. He had attended the local mission school for two years and, after a year as a medical orderly at Saiho hospital, worked for eighteen months on a rubber plantation at Sogeri. Next he worked in Rabaul with two other Ombi men for an oil company. At the end of his eighteen months' contract the company returned him to Ombi. He had intended to return to Rabaul to take up a $24 a week job he had been offered as a taxi driver but was elected Local Government Councillor at Ombi-Tara and held that position for seven years until 1963. He has worked for eight months as a cook at the nearby Sangara ex-servicemen's plantations, and had intended to apply for one of the Papuan resettlement blocks at Sangara before he heard of the possibility
245 of establishing a tenure conversion scheme at Ombi-Tara. He planted
249 1,300 cocoa trees, 400 coffee trees and 300 bush rubber trees before conversion was introduced, and had planted 661 of the new high yielding rubber seedlings up to November 1965, well above the village average.[2] He has been employed full time since October 1965 on road maintenance work near Ombi.

242 Conversion at Ombi-Tara began with a visit by a resourceful
249 Agricultural Officer (Mr D. Birmingham) in mid 1963. Noticing Charles planting some bush rubber seedlings the officer asked whether he might not prefer to plant some of the higher yielding Malayan rubber seedlings which the Department of Agriculture would supply at low cost. Charles agreed and recommended other villagers to do likewise. The Ombi-Tara people agreed and a rubber nursery was established close to Ombi village soon afterwards by the

[TEXT CONTINUED ON PAGE 13]

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[1] The Ombi-Tara people's experience with cocoa demonstrates that a sharp decrease in world commodity prices can affect progress in developing countries not only by causing earnings of foreign exchange to fall, but also by so disheartening village producers that they cease production altogether.

[2] See p.32.A

A [See Category 245--Analyst]

242 Department of Agriculture. Clonal seedlings for the nursery were
249 obtained from Malaya and from the Agriculture Department's experi-
[654] mental stations at Itikinumu and Bisianumu. Villagers can buy seedlings at 1 cent per stump.

While the seedlings were growing, several meetings were held in the two villages to discuss how the rubber should be planted. The suggestion of a communal plantation received little support, which is not surprising in view of the recent failure of the communal
[423] cocoa experiment. At these meetings the Agricultural Officer
[425] suggested that each man might plant some of the new high yielding rubber on his own land. He was supported in this by Charles and eventually the people asked for individual blocks of land. There appears to have been no opposition.

657 The history of conversion at Ombi-Tara admirably illustrates
177 Fisk's contention (1964:159) that the personality and character of
654 the administrators, officials, missionaries and other members of the advanced sector involved are often as important to the success of a planned programme of intervention in a subsistence economy as the composition of the programme itself. Although the Agricultural Officer has since left the country he is warmly remembered by the Ombi-Tara people. It is a tribute to his understanding and tact that most of the villagers consider conversion was their own idea.

The significant role played by Charles in gaining the approval of the Ombi-Tara people demonstrates the value when introducing innovations in a rural community of working through an influential member of that community. After studying the introduction of changes in techniques in a Victorian country area, Emery and Oeser concluded (1958:52-3) 'No matter how highly regarded he may be the District Agricultural Officer remains, sociologically speaking, an outsider' and has much greater effect if he works through a local leader. These findings are extremely relevant in Papua-New Guinea where the sociological gap between Agricultural Officer and farmer is far greater than in Victoria.

The new land system

657 The new land tenure arrangements were worked out by the villagers
423 and the Agricultural Officer during late 1963 and early 1964. It
[311] was decided that 800 acres of the total area claimed by the two clans should be converted into forty blocks of twenty acres (see the conversion plan on p.12). Most of the 800 acres was formerly covered with bush and appears to be of relatively uniform agricultural potential.

657 The unconverted land outside the scheme has not yet been surveyed
423 and estimates of its area vary from 2,000 to 4,500 acres. All
425 rights to land held by individuals before conversion have been
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657 productivity. Consolidation of an individual's scattered plots
423 reduces the amount of time devoted to travelling and increases the
182 acreage which can be planted with cash crops in any one location.
241 The road running through the converted area allows easy access to all holdings and facilitates interpersonal co-operation by reducing the amount of travelling time involved.

657 Consolidation has facilitated the provision of assistance by
423 Department of Agriculture staff, increasing the effectiveness of
182 officers. Planting, pest control and general crop maintenance can
242 be more efficiently supervised where there is easy access to all holdings.

Increased assistance from the Department of Agriculture has been an extremely significant factor in the increase in cash cropping activity at Ombi-Tara. In the Northern District there are more agricultural extension officers per head of local population than in most areas in Papua-New Guinea.[1] The diligence, patience, and understanding of the Agricultural Officer who initiated the conversion scheme, the stationing of an Agricultural Assistant full time at Ombi-Tara to supervise the rubber nursery and the bush rubber processing unit, and the regular visits of extension officers from Popondetta have helped to provide the essential technical and managerial skills which are lacking in the village situation.

657 Tenure conversion appears likely to enable economies of scale
423 when the rubber trees come into production, hence increasing the
182 productivity of village labour. Economies may be gained in pro-
433 cessing the latex, since the relatively large output may warrant the introduction of larger and more efficient processing equipment; in transporting the processed rubber in bulk; and in marketing. One of the problems previously faced by Ombi-Tara cocoa producers, especially when prices were low, was that buyers did not consider it worthwhile to make the journey to Ombi-Tara from Popondetta for the relatively small amount of produce.[2]

While conversion introduces economies of large scale production it also retains one of the better features of the small holding system, the maintenance of individual incentives to increase production.

Ombi-Tara experience appears to support the well-known maxim of the Food and Agriculture Organization that tenure reform, in order

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[1] The principle of concentration of development effort was endorsed by the visiting World Bank mission (International Bank for Reconstruction and Development 1965:35).

[2] The argument for increasing returns to labour in an economy moving from pure subsistence to the production of a market surplus has been stated by Fisk 1964:164.

433 were introduced. The use of these tools has
241 greatly lightened the work of the New Guinea
172 gardener and substantially reduced the time
412 needed to produce his vegetable foods. Thus time was available, when the incentive was supplied, to produce crops which could be sold for cash.

241 The introduction of new tools has not, how-
242 ever, had any marked effect upon the methods by which a New Guinea villager produces his food crops. Long ago he discovered by experience what agriculturalists have later discovered scientifically, that tropical soils when exposed to the sun and rain very rapidly lose their plant nutrient content (particularly nitrogen) and without the addition of fertilizer they will not sustain crop yields. In order then to make the most efficient use of cleared land, the villager plants his swidden with a variety of food crops, mainly tubers, which, maturing at different rates, help to maintain a constant food supply. Swiddens are usually abandoned after twelve to eighteen months and allowed to return to forest. Meanwhile new clearings are made and crops planted to ensure continuity. Forest is allowed to regenerate on old swidden sites for a period of five to twenty years depending on the population density and consequent pressure upon the land. Provided that the forest cover is left for about ten years between periods of cultivation, soil deterioration does not usually occur. Under this system of land
241 use, which can best be described as one of
242 shifting-field agriculture, the average land re-
311 quirement is a quarter of an acre per head per (P.1-B)

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year. Thus, over a ten-year land-rotation cycle, approximately two and a half acres of land are required to support one person.

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The major change that has occurred in New Guinea agriculture with the coming of white men has been the introduction of cash crops. When Europeans first arrived they found a subsistence economy. Some trade was conducted but it was almost entirely by barter and was confined in the main to items of ceremonial value, shell and feather ornaments and the like. The early administrators, both British and German, were faced with the problem of rapidly easing the financial burdens their colonies imposed on the mother countries. The only readily apparent way to do this was to encourage the production and export of copra, the dehydrated meat of mature coconuts which grew prolifically in all coastal areas. Accordingly villagers were encouraged to produce and sell copra to itinerant traders; this village or 'trade' copra was the mainstay of the colonial economy for many years until production from large scale plantations was built up. First coconuts, then rubber, coffee, and cocoa and latterly tea and pyrethrum were grown on plantations owned and managed by white men who directed gangs of indigenous labourers in the tedious tasks of keeping the jungle at bay and processing the crops. Since 1950, Administration policy has changed in favour of encouraging the production of tree crops by indigenous growers on small plots of village land or, in certain areas, on small plantations of ten to forty acres. This policy has brought into sharp focus the difference between our land ownership system and that of the New Guineans.

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Flying over New Guinea and looking down on vast areas of trees or grassland, with no apparent occupants apart from an occasional village, one may be tempted to think that there is a great deal of vacant or unclaimed land. This would be erroneous. Some indigene claims rights to every square foot of land under 7,000 feet and to much of the higher land as well; in many areas the rights claimed by one man are disputed by several others.

The European concept of individual land ownership must be discarded when considering New Guinea custom. Similarly the phrase

[P.2-A]

241 423 613 is maintained today because, the Yega say, it makes the work lighter if you have someone to gossip with, and to share a watermelon or a smoke during rest breaks. The effect is that, at any one time, many people of a sub-clan are using land to which they do not hold cultivation rights.

241 423 [602] [614] The granting of temporary rights to plant a food crop is normal procedure. A right-holder frequently grants such rights to affinal kin of a different clan or even to an affinal kinsman from a neighbouring parish. An outsider granted such a right would *never* consider that he had any permanent right to Yega land. He would simply give the right-holder a [431] [426] gift or, if asked, would lend land in return.

226 [462] The Yega are coastal people and expert fishermen. Fishing is an exclusively male occupation and fish have always been an important food. Eleven reefs are known by 226 the Yega to exist off their strip of coast; rights 423 to fish over these reefs are held by the clans 614 whose ancestors first discovered them. Any person who catches fish over a reef belonging [431] to another clan must give a gift from his catch to the right-holders. Fish are caught by many different methods but the commonest nowa- [177] days is by skin-diving with a home-made spear gun and goggles made in Hong Kong.

SUBSISTENCE GARDENING

241 The Yega gardening routine is similar to the general procedure described earlier. The main features are universal inter-planting of a wide range of food plants and a shifting-field system which provides a continuous supply of fresh vegetable food. Some special features of Yega agriculture are worth noting. These are:

241 242 a) *The shifting-field cycle.* The average length of the fallow period for twenty-one swiddens investigated was 7·4 years. Such a figure is apt to be misleading. It tends to give the impression that New Guineans are much more organized than in fact they are. Some swiddens were fallowed for as little as two years . . . 'because my brother made his garden over there and I wanted to work near him!', while others had been left as long as thirteen years . . . 'because the soil isn't very good in this place.' Human factors as well as physical

[P·8-B]

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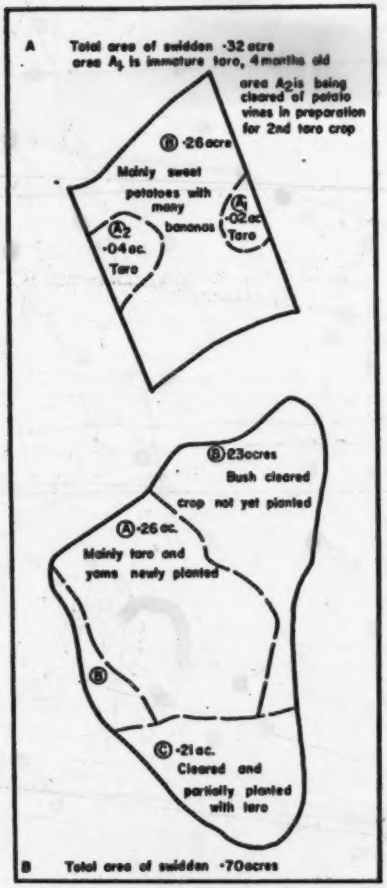
A
Total area of swidden ·32 acre
area A1 is immature taro, 4 months old
area A2 is being cleared of potato vines in preparation for 2nd taro crop
B ·26 acre
Mainly sweet potatoes with many bananas
A2 ·04 ac. Taro
A1 ·02 ac. Taro
B ·23 acres
Bush cleared
crop not yet planted
A ·26 ac.
Mainly taro and yams newly planted
B
C ·21 ac.
Cleared and partially planted with taro
B
Total area of swidden ·70 acres

Fig. 5. Examples of Yega swiddens, illustrating the method of maintaining continuity of food supply

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obviously play an important part in the selection of a swidden site.
[P.9-A]

21: Belshaw E-5 (1951) 1951 OJ23 Orokaiva OJ23
Mount Lamington

individual villagers. The houses were built on a standard pattern, not, as might be thought, to act as warehouses or storehouses or as offices, but as eating places for the co-operators. Long tables and benches were erected in them where meals were eaten on return from work. The whole movement seems to have been built upon faith—faith in God's assistance, and faith that, if certain procedures were adopted, certain results would follow.

Despite these very grave disadvantages, the future for native enterprise is not necessarily bad. "Co-operation" to these people does not necessarily mean co-operation in our sense. The word is used by them sometimes to mean nothing more than rice-production, sometimes to indicate the house built for the co-operators, sometimes simply meaning a better way of life. The Northern Division is remarkable for the variety of agricultural experiment that has taken place over a number of years. There are native owned rubber and coffee plantations, excellent citrus fruit is grown, and a wide variety of introduced vegetables have been planted and marketed. It may turn out that co-operative finance and marketing is more useful than co-operative production and that rice is not the most suitable crop. The whole matter needs skilled agricultural investigation and much more discussion with the people. But there is no doubt that some form of native business activity is required. And despite the ravages of the volcano there is still a fund of ready cash available for initial capital outlay. The Mission holds several hundred pounds on behalf of co-operators, and there are several hundred more still held by co-operative officials in village boxes. In addition to this money already subscribed, the people still have savings. I examined, for instance, thirteen savings bank books as a sample for the Hagenahambo-Timbeki-Popota people. The money in these originated entirely from War Damage Compensation payments, and there was an average of £4 held in balance, in a range from £1 17s. to £8 1s. In addition the same people stated that they had money in boxes, with an average of just under £10, in a range from nil to £2 to £39. It is impossible to work out from this sample the money likely to be held in the whole area; but it does indicate that there is capital available for minor equipment.

The general desire for co-operation and community development which, in a vague way, underlies the present aspirations of the people, raises numerous problems of a technical nature. Mass literacy, education in bookkeeping and technical trades, medical services, agricultural research and extension, all have their part to play, and political organizations have to be devised which are suitable instruments of control for these backward people. The role of anthropology in such a situation, which is becoming more and more common in the Pacific, is not only one of research to delineate the starting line of change. We need to know a great deal more about the ways in which people react to such stimuli and the way in which adjustments are made within native society over periods of time. Knowledge of adjustments which come through migration would have been particularly valuable in the Lamington situation. There is a need to perfect techniques of interpreting the hopes of people

177 higher certificate after a two-year course, while various teacher
657 training programmes were involving a number of them. Furthermore,
647 the inspector in charge of the school and, after January, 1967, also
[895] the District Inspector of Schools was a Papuan. Thus, in the Church as well as in the Health and Education Department, Papuans were in actual administrative control over Northern District operations, with white personnel nominally their subordinates. The term "nominally" must be applied to the relative rank of Papuan controllers and expatriate subordinates, because the latter are still receiving a very much higher salary. Nonetheless, the new situation definitely sets up a hierarchy, with Papuans at senior levels, and the village people are in official contact with them.

[631] I shall give two further examples of contacts with Papuan public servants. The first was with a clerk sent out by the Department of Lands, whose task it was to organise the establishment of boundaries between the wards. This man was an Orokaiva, from Jegarata, who explained the purpose of the boundaries in the Orokaiva language, at a meeting held in Garoubi and supposedly attended by all the villages in the ward. A spirited discussion took place, the people suggested village representatives, the clerk accepted the representatives proposed for Sivepe and Garoubi, but was non-committal over the other two, as he saw Isoge and Binduta were [276] insufficiently represented. He chewed betelnut with the people; the whole procedure was matter-of-fact and businesslike, and no covering-up was attempted for the two ill-represented villages. [191] The absence of an interpreter, the use of Orokaiva instead of the lingua franca (Koru), the free use of betelnut, the fact that we all sat on mats together--all this established an easy bridge between government and people.

242 During the same period, a good deal of agricultural extension
177 work was in progress in the nearby village of Sasembata. Here again, the day-to-day instruction was given by two Northern District Papuans, agricultural assistants, in a rather more junior position to the Lands Department clerk. These two young men were definitely supervised by an expatriate officer; they were staying in Sasembata village for awhile and came over to Sivepe one night for a small feast and a dance. Though they were both Aiga, they mixed easily with their Orokaiva agemates, on a basis of equality and familiarity. They were the guests of a third agricultural assistant, who belonged to Sasembata village but were working for the Department at Saiho. This young man gave me a description of the scope of agricultural development (a rubber cooperative) proceeding in Sasembata. He had a mature and responsible understanding of the project.

657 Finally, Papuan government drivers had highly significant
647 though informal contacts with villagers. These men, highly skilled
177 at negotiating the difficult roads of the Northern District, have the task of driving government personnel where they wish to go and often travel unaccompanied by officers to collect personnel or cargo.

177 the people. He was the only white man in the district (omitting the anthropologists) who actually did this. Finally, some people [464] of Sasembata district were familiar with taupa as workers and in personal service, as cookboys, housegirls, etc. outside the village.

The only taupa residents in the district were the head [875] teacher and his wife; they had daily personal contact with village [439] people especially because they bought vegetable produce for the mission, while people also approached them with a multitude of minor problems, e.g., pressure lamps that did not work, troubles at school, help needed with sports or the sewing programme of the women's club, etc. Most Sivepe men and nearly all the women were too shy to approach them. The head teacher used the Papuan priest as an intermediary when he had to approach Sivepe men when help was needed for school buildings, or when land was needed for the gardens of the mission teachers. The other taupa came to the district no more often than once or twice a year; the doctor attended patients only at Saiho; the magistrate sat at Higaturu; the nearest white planter was at Awala.

657 Characteristically, contact between the taupa and villagers
177 occurs either through the mediation of Papuan functionaries--and it is thus that basic ideas are mostly communicated to Orokaiva leaders and groups--or directly, when taupa finds it inexpedient to
[242] delegate decisions on problems affecting individuals. This tendency to deal with individuals rather than leaders or corporate groups is self-evident from the roles of many taupa (educational, medical, judicial) but I noticed it also in, for instance, agricultural extension work. Here the emphasis was on the educating of individual growers. The administration is not in favour of cooperative cash-cropping ventures, so that dealings are of necessity mostly with individuals. When it is desired to indoctrinate groups, the most useful channel at the present time is the Higaturu Council, so that the taupa's message reaches the people through an Orokaiva intermediary. The patrol officer, when visiting a village, for instance for census purposes, tends to deal with his audience in three types of ways: (a) he deals directly with the "committee" for the formal arrangements of calling the people together and to obtain what facilities he needs for his work; (b) he makes a speech expressing the desires of the government, to the assembled people; (c) he addresses individually those individuals against whom he has complaints, and he does this in front of the assembled people. These individuals, on the occasion I witnessed, received a reprimand, but they might also be arrested and jailed. This kind of meeting is held yearly in every village.

Undoubtedly, the patrol officer consults both with the councillor and the committee member in charge of the village. It was clear from his treatment of the complaints on his list that he had not only consulted, but also trusted these two local leaders. The cases with which he dealt were all connected with the policy of

Section 2: Economic Assistance

177 Subsistence: Undoubtedly, European contact had a profound influence
433 on the subsistence economy, both through the introduction of steel tools and of the pax Australiana. The government did not, however, intervene directly in the operation of the Orokaiva subsistence economy; it was a very simple economy, but it provided, in general, adequate nutrition and housing. The first time the Orokaiva subsistence
731 economy broke down seriously in the post-contact period was immediately
657 after the eruption of Mount Lamington. The government therefore decided to offer some limited assistance towards the re-establishment of the subsistence economy in the resettlement villages built when the refugees left the evacuation camps. One requirement of the new villages was a food supply until new gardens had been made and harvested. This
[241] requirement was met by the planting of a quick-growing variety of sweet potato in villages in the vicinity of Ilimo camp. The government also bought up any root crops the Orokaiva could supply and distributed these in the resettlement villages throughout 1951, as needed.

The opportunity offered by the evacuation camps was also taken
731 to introduce a few innovations which, it was thought, would improve
242 subsistence gardening in the resettlement villages. People were taught the cultivation of the variety of sweet potatoes mentioned above, as well as of corn, tomatoes and beans. Seeds and plants were supplied. An agricultural officer demonstrated on a large scale the growing of
[412] sweet potatoes and peanuts. In order to facilitate the rapid establishment of gardens--which the government hoped would be bigger and better than the pre-eruption ones--small spades were distributed to villages. These small spades were not a familiar implement to the Orokaiva, but the agricultural officers thought they would be more efficient than the wooden implements and large shovels hitherto used in villages. These small spades cannot have taken on very well; I saw none in Sivepe or Inonda. I myself had brought a spade for the garden I established in Sivepe, but my neighbour, upon seeing it, at once supplied me with a grubber (ex-American army stock). A very brief acquaintance with the root structure of the garden weeds convinced me that a spade was indeed
[227] of limited utility. Finally, in order to add to the supply of protein in the resettlement villages, the camp superintendent distributed some snorkels for catching fish.

Keesing reports there were fears in the camp that the eruption
731 would have destroyed taro seed stock, but this fear proved unfounded.
134 The taro plants remained perfectly healthy and the volcanic ash made the soil amazingly fertile for awhile, so that food shortages were quickly relieved.

Issue of Food: In the camps, rice, tinned meat, tobacco were distributed
731 according to a ration scheme based on the census figures. Each village
657 constable was issued with rations for the number of people resident in the villages under his control. These distributions were continued in

731 657 the resettlement villages as needed, but soon replaced by issues of the sweet potatoes and later, village-grown crops. Distributions tapered off after May, 1951, and ceased at the end of that year.

Commercial Enterprises: Agricultural activities are the only kind of enterprise which are encouraged or assisted by government. These activities are mostly conducted by individual entrepreneurs. No rewards are ever given for land clearing, nor are any labour costs ever paid. The government assists by providing coffee, rubber and cocoa seeds to growers. Initially these were free; nowadays, growers are charged the cost of seed.

452 657 Although there is provision in the Territory for credit assistance for economic development, small growers of cash crops such as are found in Sivepe and Inonda are not eligible for this credit. A short time before I left, one man from Inonda (again the government driver) was encouraged to apply for a loan under a new experimental scheme for beef cattle farming, but the arrangements were not complete when I left.

245 652 The government provides marketing assistance to New Guinea growers of coffee (mainly indigenous) by a remission of duty on raw coffee imported into Australia from sources other than Papua and New Guinea to each importer who obtains a certain percentage of his total requirements from the Territory. The government does not itself 245 purchase coffee but when the Higaturu Local Government Council was 474 formed one of its initial functions was to operate a cooperative for the purchase, processing and exporting of locally grown coffee. Later [651] (in 1962), the Council withdrew from this activity and an independent Orokaiva Coffee Growers Society was formed. The reason for the Council's withdrawal was advice from the government which felt uneasy about local bodies engaging in commerical activities. The effect of the setting up of the cooperative has been that service is now no longer given to all growers but to all who have bought shares as an entrance fee and become members of the cooperative. This fee was initially $4 but is constantly rising until in 1966 it reached $20. Some non-members sold [439] their coffee to the Chinese for a lower price; others sold through kinsmen who were members, and did not always receive the full proceeds. The government keeps an eye on the operations of the cooperative; in any case, it seemed well enough conducted. Until end 1966, the cooperative depended on the government for transport: the buyer who visited villages each month to collect and pay for the coffee travelled on a government truck. It is now buying trucks of its own. The nearest pick-up point for Sivepe coffee was Garombi, one mile away; the nearest pick-up point for Inonda coffee was likewise one mile away, at Ajoro.

654 242 The government also assists agriculture through its research activities conducted in various experimental stations in the Territory which specialise in rubber, coffee and other relevant crops. A resources survey has been made of large parts of the Northern District, including the Oro-Bay--Kumusi River region with which we are concerned here. A programme for the improvement of Robusta coffee is on the way,

654 and local field trials are being carried out on the volcanic soils of the Northern District.

242 Agricultural extension work was being carried on by Australian officers stationed in Popondetta, with the help of Papuan agricultural 242 assistants some of whom were stationed in a sub-office in Saiho. It is this staff which has been responsible for the gradual increase in coffee plantings and the spreading of basic knowledge about coffee cultivation. We should not, however, minimise the extent of knowledge and stimulus that spread not through the activities of officials but was passed on from experienced Orokaiva growers to beginners. Furthermore, many persons trained as agricultural assistants have returned to their villages and became a fund of knowledge to those around them. The assistants are trained in a course of between nine and twelve [874] months' duration, given at Popondetta. Papuans may also receive a full agricultural diploma course at a school near Keravat, New Britain, or a two-year sub-diploma course at a school near Keravat, New Britain, or a two-year sub-diploma certificate course given at Popondetta. Graduates from these schools were not yet working in the Northern District at the time of my visit.

No stabilisation fund for coffee exists in the Territory. The 435 violent fluctuations in price for this product do have a somewhat unsettling effect on growers, though I could not observe very much of 245 this as 1966-67 was a good year. I heard that in bad years in the near past people had been very disappointed. The problem of price fluctuations affects other tropical crops as well, and New Guinea has few sources of income which are significantly stabler than coffee. Therefore, no easy solution to this problem is possible. The Orokaiva Coffee Growers Society has been following a wise policy of withholding a substantial part of the proceeds in good years for capital improvement, thus providing a kind of cushion against fluctuations. Thus, in 1966-67, a substantial proportion of proceeds was withheld for improvements to the factory and trucks. Growers are paid an initial sum per pound substantially lower than the expected total proceeds, and the balance is in part distributed to shareholders at the end of the season, in part withheld. By this procedure, a substantial drop in export prices can be suffered without corresponding lowering of the initial cash payment. In 1966, the cash payment was $26 for a 150-pound sack.

A good deal of development work has been left for the Higaturu 657 Council to deal with. I have already mentioned that government officers 423 attempted to have the council deal with matters of land tenure improvement (though Port Moresby authorities overruled this) and that the coffee factory was planned as a council operation though again plans were changed later. In 1966, the main activities of the council were 653 in the building of roads, the improvement of water supplies, the building of medical aid posts, the maintaining of the produce markets at Popondetta and Saiho and some minor social services. (For details, see Table 12.) Thus, a sizeable area of local development had become

A (See Cat. 116, p. 217--Analyst)

755 medicine, though by no means always. Bandages were especially popular;
752 they were worn as status symbols and as dancing ornaments. Nurses and
554 physicians are regarded with affection; any person who obviously wants
753 to be helpful would be treated thus, and it has of course been noticed
that they relieve a great deal of discomfort even though Western
theories of the causation of disease are treated sceptically and mostly
explained away because the nurses and physicians usually do not under-
stand the fine points of sorcery; only the Orokaiva have this knowledge.

731 Data on the eruption period do not suggest that the attitude
743 to medicine was different then to what it is today. There were,
however, fewer facilities: the hospitals were smaller, there was
less available transport to reach them with, the chain of aid posts
built by the Higaturu Council did not yet exist, so that outside the
government hospital, the only facilities were the mission stations.

744 The evacuation camps provided a good opportunity to put a
public health programme into operation, and this opportunity was taken.
No regular anti-malarial preventive treatment was given because this
clearly could not have been continued after the camps were closed--
and it was feared that anti-malarials might lower natural resistance.
On the other hand, everyone at Ilimo was given prophylactic treatment
against hookworm. Unfortunately, this medicine had the effect of
"making people feel a little drunk." One man, the sole male survivor
of a large family killed during the eruption, went berserk through the
medicine and caused a near riot. Mr. Kaad then abandoned his campaign
against hookworm at Ilimo, reviving it later, in the Saiho period.
Prophylactic treatment against hookworm has not been continued because
reinfection constantly occurs. The camps provided a practical object
lesson on the Western ideas of treating waste matters, sanitation and
water supplies, a lesson which no doubt bore fruit some years later,
when the Higaturu Council had money and an ideological base for bringing
about such innovations. Finally, the introduction of sweet potatoes
[242] at Ilimo, by means of distribution of sample tubers and seeds and the
[146] teaching of methods of cultivation, had a definite public health
objective: it was done because the yellow and red varieties of sweet
potato are particularly rich in vitamins in which Orokaiva diet is
supposed to be often deficient. Today, some of this sweet potato is
grown in Sivepa, though on a small scale, while plantings in Inonda
are somewhat more extensive. (The sweet potatoes resist drought better
than taro.)

The most active public health programmes I saw in 1966-67
were directed at: malaria control, infant health, village hygiene.
The key figure in public health improvement at Sivepa was the health
inspector employed by the Higaturu Council. This man was expected to
cover the whole of the Council area, and spent much of his time
touring villages. As his home was at Garoubi and he had many relatives
in Sivepa, he made frequent visits. Sivepa caused him little trouble,
he told me, as waste matter was thrown into deep holes, everyone had
a lavatory and the place was kept clean in the prescribed way. On

731 liberately endeavored to keep everyone busy, and the men
657 spent much of the time in work gangs (e.g. Monday, Tues-
361 day and Wednesday were usually devoted to house-building;
179 Tuesday, Wednesday and Thursday to gardens; Friday to roads and hygiene). But leadership and organization were creatures of Government, and to some extent of Mission. There were no significant signs of a self-motivated superstructure taking form other than the strengthening of scattered clan ties. Consequently, should larger communities be established with the purpose of preventing the people from scattering out again, they would have to be bureaucratically or theocratically controlled with all the dubious consequences such a situation can entail.

731 2. Reasonable law and order was being maintained in the
659 new settlements, under the eye of a considerable force of
578 the Papuan Constabulary sent in for the emergency. Oppo-
625 nents of a concentration policy claimed, however, that the older patterns of intergroup hostility and violence are not far enough below the surface to justify the risks involved in larger long-term aggregation. As indicated, problems of land tenure are a major potential source of conflict. Another is "woman trouble," judging from experience in the camps where husbands and wives find themselves in informal association with members of the opposite sex, in contrast to the normal tightly structured small units.

731 3. Not least among the uncertain factors is that of sorcery.
754 According to those who manage the settlements, fear of
514 coming under the influence of strangers who practice sorcery shows itself as a vague but persistent factor. Most overtly it has emerged in connection with the disposal of waste products in the large camps. In typical Papuan fashion the Orokaiva is extremely secretive in his disposal of faeces and other leavings of his body because of the possibility of their use against him in harmful magic. A crucial question, therefore, has been whether group toilets could provide enough anonymity to forestall opportunities for the practice of sorcery. The problem was dealt with where possible by putting men's and women's latrines over running water. This social-supernatural sanitation problem could be serious where long term settlement of large groups is being planned.

731 4. On the economic side, no sound basis seems in sight
361 for establishing large permanent communities in the com-
241 prehensive manner proposed. As indicated, the familiar pattern of shifting gardens will normally involve seasonal movement outward from the immediate environs of the new settlements where most present cultivations are now being made. As yet, no widespread disposition exists to adopt more
● [242] intensive sedentary cultivation, although undoubtedly some will be prepared to try to continue cooperative experiments with rice and other crops and, hence, will be amenable to Government and Mission encouragement and aid here. As
731 in socio-political affairs, the responsible organization and
657 leadership would in general have to be provided from out-
[241] side, with the dependence relationship that this implies.
[179] Government might have to continue helping any large community for an indefinite period, as with the mechanized agricultural production it is introducing at the Ilimo camp.
731 In large settlements the technique of handling domestic pigs
231 and chickens, vital sources of protein, is always a difficult